

2655 Park Center Dr., Suite A Simi Valley, CA 93065 T: +1 805 526 7161 F: +1 805 526 7270

www.alsglobal.com

LABORATORY REPORT

October 30, 2013

Tim Pool SCS Aquaterra 13 Executive Dr., Suite 1 Fairview Heights, IL 62208

RE: Cottonwood Hills Flare Gas Sample

Dear Tim:

Enclosed are the results of the samples submitted to our laboratory on October 25, 2013. For your reference, these analyses have been assigned our service request number P1304751.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 11:27 am, Oct 30, 2013

Sue Anderson Project Manager



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Client: SCS Aquaterra

Project: Cottonwood Hills Flare Gas Sample

Service Request No: P1304751

CASE NARRATIVE

The samples were received intact under chain of custody on October 25, 2013 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Sulfur Analysis

The samples were analyzed for twenty sulfur compounds per ASTM D 5504-08 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan. This method is not included on the laboratory's NELAP, DoD-ELAP, or AIHA-LAP scope of accreditation.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.



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ALS Environmental - Simi Valley

Certifications, Accreditations, and Registrations

Agency	Web Site	Number
AIHA	http://www.aihaaccreditedlabs.org	101661
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0694
DoD ELAP	http://www.pjlabs.com/search-accredited-labs	L11-203
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2012039
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	581572
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	CA200007
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413- 13-4
Utah DOH (NELAP)	http://www.health.utah.gov/lab/labimp/certification/index.html	CA01627201 3-3
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

DETAIL SUMMARY REPORT

Client: SCS Aquaterra Service Request: P1304751 Project ID: Cottonwood Hills Flare Gas Sample ASTM D5504-01 - Sulfur Bag Date Received: 10/25/2013 Time Received: 07:55 Date Time Client Sample ID Lab Code Matrix Collected Collected CWH-7 P1304751-001 10/24/2013 14:35 X Air CWH-8 P1304751-002 Air 10/24/2013 14:45 X CWH-9 P1304751-003 Air 10/24/2013 14:55 X



Air - Chain of Custody Record & Analytical Service Request

Page		10	
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2655 Park Center Drive, Suite A Simi Valley, California 93065 Phone (805) 526-7161

Phone (805) 526-7161					Requested Turnaround Time in Business Days (Surcharges) please circle						d CAS Project No.		
Fax (805) 526-7270			-		1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standar				lard	4130	4751		
Company Name & Address	(Banodino I	nformation)			Project	Name			 -		CAS Contact		
Company Name & Address Aquaterra Er 13 Gxecutive T Fairview He Project Manager T	Wirer me	tal Solu	itians I	pic.		Cottoh	wood Hill	Elora	France Co	-1	Analyele	Method	
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Fairview Hei	ahts IL	6270	8								-2		
Project Manager					P.O. #	/ Billing Inform	nation			•	7 5		
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(618)628-200	1	(6/8)	628 - 201	02			İ				D5504		e.g. Actual Preservative or
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Client Sample ID		Laboratory ID Number	Date Collected	Time Collected	(E	Canister ID Sar code # - C, SC, etc.)	Flew Controller ID (Bar code #- FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume	ASTM total s		
_ CWH-7		n)	10-24-1	1435		15-60677				14	X		
_ CWH-8	(2)		1445	1	15-60675			/	14	X	.*	
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Report Tier Levels - plea	se select						1	<u></u>	<u> </u>			L	
Tier I - Results (Default if not s		••					mmaries)				ired Yes /	No	Project Requirements
Tier II (Results + QC Summar	es)			Tier IV (Data \	. 1		Surcharge			Type:		_	(MRLs, QAPP)
Relinquished by: (Signature)	for 16	2/1		Date: (0-24-1	Time:	SSO	Received by: (Signa	ure) A CO	200		WHAM	Time:	
Relinquished by: (Signature)	()			Date:	Time:		Received by: (Signa	ture)			Date;	Time:	Cooler / Blank Temperature °C

ALS Environmental Sample Acceptance Check Form

Client:	SCS Aquaterra	a				Work order:	P1304751			
		lills Flare Gas Sample								
Sample(s) received on:	10/25/13		.]	Date opened:	10/25/13	by:	MZAM	ORA	
Vote: This	form is used for <u>all</u>	samples received by ALS.	The use of this f	orm for custody se	eals is strictly me	eant to indicate prese	nce/absence and r	not as an in	dication	of
compliance		Thermal preservation and properly managed to the containers properly managed to the containers properly managed to the containers of the c				e client and/or as req	uired by the meth	od/SOP. Yes X	<u>No</u>	<u>N/A</u>
2	_	upplied by ALS?		•				×		
		d sample containers arrive in good condition?								
4	Were chain-of	f-custody papers used	and filled out	?				X		
5	Did sample co	ontainer labels and/or	tags agree wi	th custody pap	ers?			X	П	
6	Was sample v	olume received adequ	ate for analys	is?				X		
7		rithin specified holding						×		
8	=	mperature (thermal p		of cooler at reco	eint adhered t	0?				×
O	was proper te	mperature (mermar p	reservation) o	r cooler at rec	orpe danierea e	.0.		_	_	_
9	Was a trip bla	nk received?								X
10	Were custody	seals on outside of co	oler/Box?						X	
		Location of seal(s)?					Sealing Lid?			×
	Were signature	e and date included?					_			\times
	Were seals int									X
		seals on outside of sar	nple container	-?					×	
	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Location of seal(s)?	-				Sealing Lid?			X
	Were signature	e and date included?								×
	Were seals int									X
11		rs have appropriate pr	reservation a	ccording to me	ethod/SOP or	Client specified	information?			×
11		nt indication that the s		-		enent speemed	momation.			×
		ials checked for presen	-							×
					1TT1	:c	:40			X
10		t/method/SOP require			шрте ры апа	ii necessary ane	I II.			
12	Tubes:	Are the tubes capp		($\overline{\mathbf{x}}$
		Do they contain m								×
13	Badges:	Are the badges pr								X
		Are dual bed badg	ges separated a	and individuall	y capped and	intact?				×
Lab	Sample ID	Container	Required	Received	Adjusted	VOA Headspace	Recei	pt / Prese	rvation	
	•	Description	рН *	pН	pН	(Presence/Absence		Commen		
P1304751	-001.01	1 L Zefon Bag								
P1304751		1 L Zefon Bag								
P1304751	-003.01	1 L Zefon Bag								
					<u> </u>	<u> </u>	1			
Explair	any discrepanci	es: (include lab sample l	D numbers):							

RESULTS OF ANALYSIS Page 1 of 1

Client: SCS Aquaterra

Client Sample ID: CWH-7

Client Project ID: Cottonwood Hills Flare Gas Sample

ALS Project ID: P1304751

ALS Sample ID: P1304751-001

Test Code: ASTM D 5504-08

Instrument ID: Agilent 6890A/GC13/SCD

Analyst: Mike Conejo Sample Type: 1 L Zefon Bag

Test Notes:

Date Received: 10/25/13 Date Analyzed: 10/25/13 Time Analyzed: 09:44

Date Collected: 10/24/13

Time Collected: 14:35

Volume(s) Analyzed: 0.050 ml(s)

CAS#	Compound	Result	MRL	Result	MRL	Data
		$\mu \mathrm{g}/\mathrm{m}^3$	μg/m³	${f ppbV}$	ppbV	Qualifier
7783-06-4	Hydrogen Sulfide	370,000	140	270,000	100	
463-58-1	Carbonyl Sulfide	2,800	250	1,100	100	
74-93-1	Methyl Mercaptan	8,900	200	4,500	100	
75-08-1	Ethyl Mercaptan	ND	250	ND	100	
75-18-3	Dimethyl Sulfide	16,000	250	6,300	100	
75-15-0	Carbon Disulfide	2,100	160	680	50	
75-33-2	Isopropyl Mercaptan	3,500	310	1,100	100	
75-66-1	tert-Butyl Mercaptan	840	370	230	100	
107-03-9	n-Propyl Mercaptan	ND	310	ND	100	
624-89-5	Ethyl Methyl Sulfide	ND	310	ND	100	
110-02-1	Thiophene	2,800	340	820	100	
513-44-0	Isobutyl Mercaptan	ND	370	ND	100	
352-93-2	Diethyl Sulfide	ND	370	ND	100	
109-79-5	n-Butyl Mercaptan	ND	370	ND	100	
624-92-0	Dimethyl Disulfide	ND	190	ND	50	
616-44-4	3-Methylthiophene	ND	400	ND	100	
110-01-0	Tetrahydrothiophene	ND	360	ND	100	
638-02-8	2,5-Dimethylthiophene	ND	460	ND	100	
872-55-9	2-Ethylthiophene	ND	460	ND	100	
110-81-6	Diethyl Disulfide	ND	250	ND	50	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

RESULTS OF ANALYSIS Page 1 of 1

Client: SCS Aquaterra

Client Sample ID:CWH-8ALS Project ID: P1304751Client Project ID:Cottonwood Hills Flare Gas SampleALS Sample ID: P1304751-002

Test Code: ASTM D 5504-08

Instrument ID: Agilent 6890A/GC13/SCD

Analyst: Mike Conejo Sample Type: 1 L Zefon Bag

Test Notes:

Time Collected: 14:45
Date Received: 10/25/13
Date Analyzed: 10/25/13
Time Analyzed: 09:10

Date Collected: 10/24/13

Volume(s) Analyzed: 0.050 ml(s)

CAS#	Compound	Result	MRL	Result	MRL	Data
		$\mu \mathrm{g}/\mathrm{m}^3$	μg/m³	${f ppbV}$	ppbV	Qualifier
7783-06-4	Hydrogen Sulfide	520,000	140	380,000	100	
463-58-1	Carbonyl Sulfide	3,100	250	1,300	100	
74-93-1	Methyl Mercaptan	12,000	200	6,200	100	
75-08-1	Ethyl Mercaptan	ND	250	ND	100	
75-18-3	Dimethyl Sulfide	20,000	250	7,800	100	
75-15-0	Carbon Disulfide	2,400	160	770	50	
75-33-2	Isopropyl Mercaptan	4,800	310	1,500	100	
75-66-1	tert-Butyl Mercaptan	1,900	370	510	100	
107-03-9	n-Propyl Mercaptan	ND	310	ND	100	
624-89-5	Ethyl Methyl Sulfide	ND	310	ND	100	
110-02-1	Thiophene	3,600	340	1,000	100	
513-44-0	Isobutyl Mercaptan	ND	370	ND	100	
352-93-2	Diethyl Sulfide	ND	370	ND	100	
109-79-5	n-Butyl Mercaptan	ND	370	ND	100	
624-92-0	Dimethyl Disulfide	ND	190	ND	50	
616-44-4	3-Methylthiophene	ND	400	ND	100	
110-01-0	Tetrahydrothiophene	ND	360	ND	100	
638-02-8	2,5-Dimethylthiophene	ND	460	ND	100	
872-55-9	2-Ethylthiophene	ND	460	ND	100	
110-81-6	Diethyl Disulfide	ND	250	ND	50	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

RESULTS OF ANALYSIS Page 1 of 1

Client: SCS Aquaterra

Client Sample ID:CWH-9ALS Project ID: P1304751Client Project ID:Cottonwood Hills Flare Gas SampleALS Sample ID: P1304751-003

Test Code: ASTM D 5504-08

Instrument ID: Agilent 6890A/GC13/SCD

Analyst: Mike Conejo Sample Type: 1 L Zefon Bag

Test Notes:

Time Collected: 14:55
Date Received: 10/25/13
Date Analyzed: 10/25/13
Time Analyzed: 09:28

Date Collected: 10/24/13

Volume(s) Analyzed: 0.050 ml(s)

CAS#	Compound	Result	MRL	Result	MRL	Data
		$\mu\mathrm{g}/\mathrm{m}^3$	μg/m³	\mathbf{ppbV}	ppbV	Qualifier
7783-06-4	Hydrogen Sulfide	460,000	140	330,000	100	
463-58-1	Carbonyl Sulfide	2,800	250	1,100	100	
74-93-1	Methyl Mercaptan	11,000	200	5,500	100	
75-08-1	Ethyl Mercaptan	ND	250	ND	100	
75-18-3	Dimethyl Sulfide	18,000	250	7,000	100	
75-15-0	Carbon Disulfide	2,300	160	740	50	
75-33-2	Isopropyl Mercaptan	4,500	310	1,400	100	
75-66-1	tert-Butyl Mercaptan	2,500	370	690	100	
107-03-9	n-Propyl Mercaptan	ND	310	ND	100	
624-89-5	Ethyl Methyl Sulfide	ND	310	ND	100	
110-02-1	Thiophene	3,900	340	1,100	100	
513-44-0	Isobutyl Mercaptan	ND	370	ND	100	
352-93-2	Diethyl Sulfide	ND	370	ND	100	
109-79-5	n-Butyl Mercaptan	ND	370	ND	100	
624-92-0	Dimethyl Disulfide	ND	190	ND	50	
616-44-4	3-Methylthiophene	ND	400	ND	100	
110-01-0	Tetrahydrothiophene	ND	360	ND	100	
638-02-8	2,5-Dimethylthiophene	ND	460	ND	100	
872-55-9	2-Ethylthiophene	ND	460	ND	100	
110-81-6	Diethyl Disulfide	ND	250	ND	50	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

RESULTS OF ANALYSIS Page 1 of 1

Client: SCS Aquaterra

Client Sample ID:Method BlankALS Project ID: P1304751Client Project ID:Cottonwood Hills Flare Gas SampleALS Sample ID: P131025-MB

Test Code: ASTM D 5504-08

Instrument ID: Agilent 6890A/GC13/SCD

Analyst: Mike Conejo Sample Type: 1 L Zefon Bag

Test Notes:

Date Received: NA
Date Analyzed: 10/25/13
Time Analyzed: 08:34

Date Collected: NA

Time Collected: NA

Volume(s) Analyzed: 1.0 ml(s)

CAS#	Compound	Result	MRL	Result	MRL	Data
		$\mu \mathrm{g}/\mathrm{m}^3$	μg/m³	ppbV	ppbV	Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	_
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

LABORATORY CONTROL SAMPLE SUMMARY Page 1 of 1

Client: **SCS** Aquaterra

Client Sample ID: Lab Control Sample ALS Project ID: P1304751 Client Project ID: Cottonwood Hills Flare Gas Sample ALS Sample ID: P131025-LCS

Test Code: ASTM D 5504-08

Date Collected: NA Agilent 6890A/GC13/SCD Date Received: NA Instrument ID: Analyst: Mike Conejo Date Analyzed: 10/25/13

Sample Type: 1 L Zefon Bag Volume(s) Analyzed: NA ml(s)

Test Notes:

					ALS	
CAS#	Compound	Spike Amount	Result	% Recovery	Acceptance	Data
		ppbV	${f ppbV}$		Limits	Qualifier
7783-06-4	Hydrogen Sulfide	2,050	1,350	66	63-140	
463-58-1	Carbonyl Sulfide	2,020	1,330	66	63-138	
74-93-1	Methyl Mercaptan	1,890	1,410	75	63-144	